

## **NIST/MML/MSED Research Associate Opportunity**

TITLE: Developing Digital Twin Infrastructure for Metals Additive Manufacturing

### Overview

The Materials Measurement Laboratory of the National Institute of Standards and Technology is seeking qualified persons (U.S. Citizens preferred) to advance the development of a high-fidelity digital twin framework for laser-based metal additive manufacturing. To address current industry limitations in the credibility and uncertainty quantification of digital twins, this research focuses on coupling experimental observations with physics-based reduced order models. Key responsibilities include utilizing Fourier neural operator surrogate models for the data-driven discovery of nonlinear dynamics and developing data assimilation techniques to bridge the gap between experimental characterization and computational modeling. The ultimate objective is to integrate these calculation methods into open-source tools that enable a calibrated, predictive additive manufacturing environment.

### Duties

- Design, implement, and deploy approaches for integrating surrogate models into an AI/UQ (uncertainty quantification) framework for AM models.
- Collaborate with others to communicate needs and results across the different length scales.
- Implementing calculation methods into existing open-source codes and ensuring that all generated data is made accessible.
- Presenting results at internal meetings, and occasional meetings with external stakeholders.

### Required Skills, Expertise and Qualifications

- Ph.D. in Materials Science and Engineering or a related field (Applied Mathematics/Physics).
- Experience developing physics-based multiscale models.
- Experience developing with scientific Python tools and environments.
- Excellent written and oral communication skills are required.

Employment Terms: This opportunity is to be an associate researcher in the NIST Materials Science and Engineering Division for a term of 1 year, with options to renew. Associate researchers are NOT Federal Employees, but they work along with NIST researchers and with NIST's often world class instrumentation. Relocation expenses will not be provided. U.S. Citizens hired into associate positions may have the opportunity to seek longer term Federal Employment.

Salary: Between \$82,000 and \$87,000, based on qualifications and experience.

How to express interest: Interested persons (U.S. Citizens preferred) who meet all of the required qualifications are invited to express their interest by sending an email that briefly describes their qualifications along with a CV to [642assoc@nist.gov](mailto:642assoc@nist.gov). U.S. Citizens should note "US Citizen" and the opportunity title in the email subject line. All others should note "Non-US Citizen" and the opportunity title in the email subject line.